

CNG/LNG Composition

Constituent	Chemical Formula	Typical Pipeline Natural Gas	Typical Liquefied Natural Gas	99% LNG (LMG)
Methane	CH4	88.90%	94.70%	99%
Ethane	C2H6	5.34%	4.80%	~ 1%
Propane	C3H8	0.46%	0.40%	-
Butane	C4H10	0.05%	0.06%	-
Pentane	C5H12	0.03%	0.01%	-
Hexane	C6H14	0.02%	0.01 %	-
Helium	He	0.20%	-	-
Nitrogen	N2	5.50%	0.02%	-
Carbon Dioxide	CO2	0.50%	-	-
Avg. BTU/FT3		986	1047	896



Engine Manufacturers LNG Recommendation

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Component	Tolerance	CAP	Cummins	Deere	Detroit	Mack
		Dual-Fuel				
Hydrocarbons						
Methane	Minimum	88.0%	90%		88%	85%
Ethane	Maximum	6.0%	4%	3%	6%	11%
C ₃ +	Maximum	3.0%				
Propane	Maximum		1.70%	5%	1.70%	9%
C ₄ +	Maximum		0.70%		0.30%	
C ₆ +	Maximum	0.2%				
Butane	Maximum			1%		5%
Ethane + Propane + Butanes						11%
Other Species						
Inerts (N ₂ , CO ₂)	Maximum	1.5 - 4.5%	3.0% total			2% N ₂
						3% CO ₂
Oxygen	Maximum	1.0%	0.50%			
Hydrogen	Maximum	0.1%	0.10%		0.10%	
CO	Maximum	0.1%	0.10%		0.10%	
Sulfur	Maximum		0.001% mass		22 ppm/m	
Methanol	Maximum				0% mass	
CO ₂ + N ₂ + O ₂	Maximum				4.50%	
Other Values						
Wobbe No.	Range		1300-1377 Btu/scf		1290-1380 Btu/scf	
Octane Rating	Minimum			118	115 (motor)	
Heating Value	Minimum			905 btu/scf		



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Fueling System Alternatives

